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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,369	04/17/2001	Isabelle Harter	PET-1928	5770
23599	7590	09/08/2004	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			MCHENRY, KEVIN L	
			ART UNIT	PAPER NUMBER
			1725	

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/835,369	Applicant(s) HARTER ET AL.	
	Examiner Kevin L. McHenry	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5 and 14-22 is/are rejected.
- 7) ☒ Claim(s) 4, 18, 19, 21 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/17/01</u> . | 6) <input type="checkbox"/> Other: ____. |

Drawings

1. Figures 1, 5a, and 6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 5 and 55. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 18 is objected to because of the following informalities:

In line 4 of claim 18 the word comprising is misspelled.

Appropriate correction is required.

4. Claims 19, 21, and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 19, 21, and 22 refer to intended uses of the vessel cited in claim 18 without further limiting the structure of the vessel.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jensen (U.S.P. 4,140,625) in view of Hearn et al. (U.S.P. 5,523,062).

Jensen teaches a subassembly for contact and material distribution of a gas phase and a liquid phase. Jensen teaches that this subassembly can be used for hydrocarbon reactions. The subassembly includes a distributor tray with a plurality of downcomers surmounted by a cap. The downcomers have at least one upper cross section of flow for

entry of a gas phase into the downcomer and at least one lower cross section of flow for entry of a liquid phase into the downcomer. Jensen teaches that the downcomers may be positioned so that they extend above and below the tray, that the cross sections for liquid entry are apertures or slots, that there may be more than one cross section for liquid entry above the tray and below the cross section for gas entry, and that the cross section for liquid entry is positioned above the tray to allow for a level of liquid in the tray. Jensen teaches that splash blocks may be positioned below the downcomers to effect widespread distribution of material. (See U.S.P. 4,140,625; Figures 1, 5, 16-18, 20; column 1, lines 6-35, 57-61; column 2, lines 38-55; column 8, lines 40-49; column 9, lines 7-14; column 10, lines 29-68; column 11, lines 1-14, 60-62; column 12, lines 19-44).

Jensen does not teach the use of a packing within the downcomers or the nature of the packing.

Hearn et al. teach a distribution structure for distillation that is composed of layers of plates running transverse to the flow of material. Hearn et al. teach that more than one packing can be used in a process. Hearn et al. teach that this packing improves the separation characteristics of distillation columns and that the packing redistributes gas and liquid flow evenly across the column. (See U.S.P. 5,523,062; Figures 1 and 6; column 1, lines 8-12; column 2, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the subassembly of Jensen by the teachings of Hearn et al. One would have been motivated to add the packing taught by Hearn et al. in order to improve separation characteristics and allow even distribution of gas and liquid flow, as taught by Hearn et al.

7. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel et al. (U.S.P. 5,232,283) in view of Jensen (U.S.P. 4,140,625) and Hearn et al. (U.S.P. 5,523,062).

Goebel et al. teach a vessel with upper and lower parts, an inlet in the upper part for introducing a liquid fluid and a gaseous fluid, upper and lower catalysts beds, and a side inlet for a third fluid. Goebel et al. teach that the side inlet is for a quench gas. (See U.S.P. 5,232,283; Figure 5; column 3, lines 58-68; column 4, lines 1-19).

Goebel et al. does not teach the use of a subassembly with a packing.

Jensen teaches a subassembly for contact and material distribution of a gas phase and a liquid phase. Jensen teaches that this subassembly can be used for hydrocarbon reactions. The subassembly includes a distributor tray with a plurality of downcomers surmounted by a cap. The downcomers have at least one upper cross section of flow for entry of a gas phase into the downcomer and at least one lower cross section of flow for entry of a liquid phase into the downcomer. Jensen teaches that the downcomers may be positioned so that they extend above and below the tray, that the cross sections for liquid entry are apertures or slots, that there may be more than one cross section for liquid entry above the tray and below the cross section for gas entry, and that the cross section for liquid entry is positioned above the tray to allow for a level of liquid in the tray. Jensen teaches that splash blocks may be positioned below the downcomers to effect widespread distribution of material. This reference teaches that this subassembly provides uniform introduction of a vapor/liquid mixed phase to a bed of catalyst particles in mist form while resisting segregation and channeling as the phases move

through the bed. (See U.S.P. 4,140,625; Figures 1, 5, 16-18, 20; column 1, lines 6-35, 57-61; column 2, lines 38-55; column 8, lines 40-49; column 9, lines 7-14; column 10, lines 29-68; column 11, lines 1-14, 60-62; column 12, lines 19-44).

Hearn et al. teach a distribution structure for distillation that is composed of layers of plates running transverse to the flow of material. Hearn et al. teach that more than one packing can be used in a process. Hearn et al. teach that this packing improves the separation characteristics of distillation columns and that the packing redistributes gas and liquid flow evenly across the column. (See U.S.P. 5,523,062; Figures 1 and 6; column 1, lines 8-12; column 2, lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time that the applicant's invention was made to have modified the vessel of Goebel et al. by the teachings of Jensen and Hearn et al. One would have been motivated to use the subassembly of Jensen to provides uniform introduction of a vapor/liquid mixed phase to a bed of catalyst particles in mist form while resisting segregation and channeling as the phases move through the bed, as taught by Jensen. One would have been motivated to add the packing taught by Hearn et al. in order to improve separation characteristics and allow even distribution of gas and liquid flow, as taught by Hearn et al. The examiner notes the intended uses cited in claims 19, 21, and 22 and notes that the vessel taught above is capable of these uses.

Allowable Subject Matter

8. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be a nonobvious improvement over the invention patented by Jensen (U.S.P. 4,140,625). The improvement comprises the last packing is located close to the cross section of flow of the lower portion of the downcomer for dispersing a two-phase or poly-phase mixture in which a portion of the packing is internal to the downcomer and a portion is external to the downcomer.


Conclusion

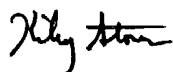
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Darmancier et al. (U.S.P. 5,882,610), Forbes (U.S.P. 3,431,084), Overbeek et al. (U.S. 2001/0051119), Gelbein et al. (U.S.P. 5,073,236), Moritz et al. (U.S. 2003/0124038), and Buchholz et al. (U.S.P. 5,275,790) are cited of interest for illustrating the state of the art in downcomers and packings.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin L. McHenry whose telephone number is (571) 272-1181. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kevin McHenry

KILEY S. STONER
PRIMARY EXAMINER
 9/7/04